

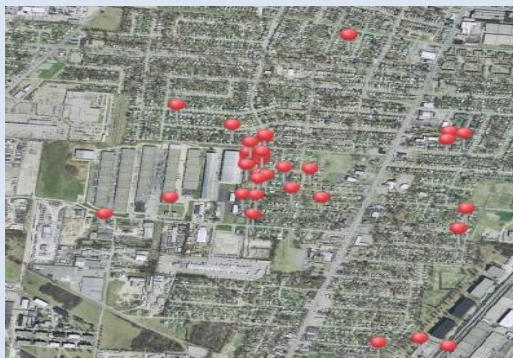


Whiskey Aging Warehouses and the Effects to Surrounding Residential Neighborhoods in Louisville, Kentucky

Background

The Louisville Metro Air Pollution Control District has received several complaints of strong odors and an unknown black sooty substance on properties located near whiskey aging warehouses. The complainants have stated that not only is the black soot a nuisance but also causes cosmetic damage to their property. The complainants have made repeated attempts to remove the black soot from their properties by pressure-washing and painting; unfortunately, this has not corrected or repaired the damage.

The District responded to each submitted complaint and performed a detailed investigation into the identification and cause of the sooty black substance. District compliance officers took photographs and collected surface samples from several locations.



Complaints near whiskey aging warehouses



The black soot has been observed on the following surfaces:

- Vehicles
- Awnings
- Vegetation
- Pavement
- Fences
- Various types of siding
- Outdoor furniture & appliances
- Brick walls
- A/C units
- Landscaping
- Street signs
- Gutters

Research

The District's analysis and research indicated the black soot and odors are the result of emissions from whiskey aging warehouses. During the aging process, whiskey is stored in oak barrels for several years and throughout this process at least 2% of the whiskey (per barrel) evaporates each year in the form of ethanol, otherwise known as the "angel's share." Research performed by mycologist Dr. James Scott and his company, Sporometrics Inc., genetically analyzed the substance and identified the black soot as a fungus called *Baudoinia Compniacensis* (a.k.a. "whiskey fungus").

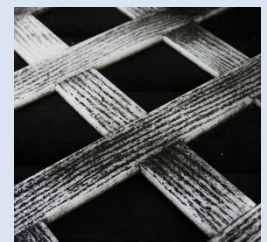
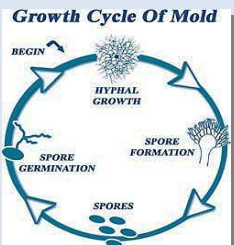


Discussion

Fungal growth in close proximity to whiskey aging warehouses is subject to periodic low-level ethanol vapors. The released ethanol vapors perform three important functions encouraging the growth of *Baudoinia*:

1. *Baudoinia* uses the ethanol as a carbon source, stimulating rapid growth.
2. Low levels of ethanol exposure activate survival responses or "heat shock" proteins in *Baudoinia*, causing it to become dormant and survive unharmed during environmental stresses.
3. Ethanol will stimulate the production of trehalose, a carbohydrate storage compound and energy source for germinating fungal spores during environmental stresses.

The reproductive fungal spores are released into the air and carried elsewhere to begin the process of growth all over again. Mature colonies of whiskey fungus are crust-like and scorched in appearance, sometimes reaching 1-2 cm. in thickness. The pronounced blackening from whiskey fungus often extends a considerable distance from the ethanol emission source and indiscriminately colonizes on exposed surfaces.



*This report was produced by:
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